



EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING BIOMEDICAL WASTE MANAGEMENT AMONG NURSING STUDENTS

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ABSTRACT

Medical care is vital for our life health and well being. But the waste generated from medical activities can be hazardous, toxic and even lethal because of their high potential for disease transmission. The hazardous and toxic part of waste from health care establishments comprising infections, biomedical and radioactive material as well as sharps constitute a grave risk, if these are not properly treated / disposed or is allowed to get mixed with other municipal waste. With a judicious planning and management, however, the risk can be considerably reduced. Proper training of health care establishment personnel at all levels coupled with sustained motivation can improve the situation considerably. The aim of the study was to evaluate the effectiveness of planned teaching programme on biomedical waste management among nursing students. An evaluative research approach was used for this study. The sample comprised of 50 students belonging to the age above 18 years selected by using simple random sampling technique. The results showed that the mean post-test knowledge score (20.6) was higher than the pre-test score (10.92) and the calculated 't' value (12.48) was also greater than the table value (2.008) at 0.005 level of significance. the study revealed that the Structured Teaching Programme was effective in improving the management of biomedical waste in the hospitals

KEYWORDS: Structured teaching programme; biomedical waste management; Nursing students.

INTRODUCTION:

"Thank god men can't fly and lay waste in the sky"

- Henry David Thoreau

Waste is unwanted or useless materials; waste is directly linked to human development both technologically and socially. The compositions of different wastes level varied over time and location with industrial develop and innovations being directly linked to waste materials. Some components of waste have economical value and can be recycled once correctly recovered.¹

Biomedical waste is generated in the diagnosis, treatment or immunization of human being or animals, in research or in the production or testing of biological products². It includes all categories of infected and toxic waste that is potential threat to human being and environment. In some country it is termed as 'regulated waste' or 'health care waste' or simply 'medical waste'.

The subject of biomedical waste management and handling has been assuming increasing significance for the past few years. The responsibility of medical administrators as regards proper handling and disposal of this category of waste has now become a statutory requirement with the promulgation of Govt. of India. The present system of biomedical waste disposal in armed forces is far from satisfactory. It is there for highly desirable that all service officers concerned with the administration of hospitals and other health care echelons take all steps to adhere to the laid down directives³.

Biomedical waste is an issue of growing concern since it is source for contamination and pollution, capable of causing diseases and illness and either through direct contact or indirectly through contamination of soil, ground water, surface water, and air.

Need for the study:

Hazardous waste means the component of waste stream which by its characteristics causes a threat to or risk to human being or to the environment. Unsafe healthcare practices expose health care professionals, waste handlers and the community to infection and injuries. Nurses are the most vulnerable group and have 3-5 times higher risk than the general population⁴.

Proper handling, treatment and disposal of biomedical waste are important elements of health care office infection control programme. Correct procedure will help to protect health care workers, patient and local community. If properly designed and applied, waste management can be a relatively effective and efficient complaint-related practice⁵.

So investigator felt that need to assess their knowledge and provide knowledge through prepared planned teaching programme to improve the knowledge on proper biomedical waste management.

Statement of the problem:

A Pre-experimental study to assess the effectiveness of structured teaching programme on knowledge regarding biomedical waste management among students in a selected Nursing college at Mangalore.

Objectives:

1. To determine the level of knowledge of student regarding biomedical waste management.
2. To evaluate the effectiveness of structured teaching programme regarding biomedical waste management among students.
3. To find the association of knowledge score with selected socio demographic variables.

Assumption:

The study assumes that the Structured Teaching Programme may be an effective method to improve the knowledge regarding biomedical waste management among students.

Hypotheses:

- H₁:** The mean post-test knowledge score of students on biomedical waste management will be significantly higher than their mean pre-test knowledge score.
- H₂:** There will be significant association of knowledge score of students regarding the biomedical waste management with selected demographic variables.

Operational definitions:

1. **Structured teaching programme:** In this study, it refers to a teaching programme, which is designed by the investigators to provide knowledge to students on biomedical waste management with the help of Power Point Slides.
2. **Students:** It refers to the male and female students of selected college of nursing, who have completed IV year B.Sc Nursing and are doing internship programme in a selected hospital Mangalore.
3. **Biomedical waste and its management:** In this study, it refers to a technique of dealing with any waste which is generated during the diagnosis, treatment or immunization of human being or animal or in research activities pertaining to their or in the production or testing of biomedical products.

Delimitations:

Nursing students who

1. have completed IV year B.Sc Nursing and doing their internship programme in a selected hospital at Mangalore.
2. are willing to participate in the study.

MATERIALS AND METHODS:

Research Approach:

Quantitative approach was used for the present study.

Research Design:

Pre-experimental one group pre-test post- test design was adopted for the study.

Variables used for the study:

The variables under the study include:

Independent variables:

In this study, Structured Teaching Programme on biomedical waste management was the independent variable.

Dependent variables:

The dependent variable in the present study was knowledge of the IV year B.Sc Nursing students

Setting of the study:

This study was conducted in Laxmi Memorial Institute of Nursing, Mangalore.

Population:

The study population was students who were doing their internship in selected nursing college after completion of IV year B.Sc Nursing.

Sample and Sampling technique:

50 IV year B.Sc Nursing students, who fulfilled the inclusion criteria were selected using Simple random Sampling Technique.

Sampling criteria:**Inclusion criteria:**

Students who

- were doing Internship in a selected college of nursing at Mangalore.

- are willing to participate in the study.

- has not undergone any such interventional programme.

Exclusion criteria:

Students who have already undergone any interventional programme for biomedical waste management.

Data Collection Process:

Prior to data collection, permission was obtained from the concerned authority for conducting the study. The data collection period extended from 23/02/2015 to 02/03/2015. Self introduction and purpose of data collection was explained to sample. Informed consent was taken from sample. On the first day pre-test was obtained using structured knowledge questionnaire and followed by planned teaching programme was administered. On the 7th day, post-test was conducted using the same tool to assess the knowledge on biomedical waste management.

RESULT AND DISCUSSION:**I. Description of the demographic variable of the sample.**

This section deals with the description of sample characteristics of the subjects and each presented in frequency and percentage in the table given below.

1. Frequency and percentage distribution of nursing students according to age

n = 50

Demographic variables		Frequency (f)	Percentage (%)
Age in years	18-20	2	4
	21-23	42	84
	>24	6	12
Sex	Male	14	28
	Female	36	72
Previous knowledge	Yes	35	70
	No	15	30
Source of knowledge	Mass media	6	12
	Health personnel	3	6
	Clinical experience	35	70
	In-service education programme	6	12

Table 1 shows that

- majority (84%) of the sample are in the age group of 21-23 yrs and only (4%) are in the age group of 18-20 yrs.
- majority (72%) of the samples were female and only (28%) were male.
- (70%) of the sample had previous knowledge regarding biomedical waste management and (30%) had no previous knowledge.
- majority (70%) of the sample had knowledge from clinical experience and only 6% had knowledge from health personnel.

II. Knowledge of student nurses regarding biomedical waste management

This section deals with the distribution of knowledge scores.

2. Frequency and percentage distribution of knowledge score of students regarding biomedical waste management.

n = 50

Level of knowledge	Pre-test		Post-test	
	Frequency (f)	%	Frequency (f)	%
Good (22-32)	1	2	28	56
Average (11-21)	21	42	19	38
Poor (0-10)	28	56	3	6

The table shows that majority (56%) of the sample had good knowledge regarding biomedical waste management and only (6%) of students had poor knowledge in the post-test, whereas in pre-test (2%) had good knowledge and (56%) had poor knowledge on biomedical waste management.

III: Effectiveness of planned teaching programme on biomedical waste management

To find the significant difference between the mean pre-test and post test knowledge score, paired 't' test was used and data is presented in the form of table.

3. Comparison of pre-test and post test knowledge score

n = 50

	Mean	Standard deviation	Mean difference	't' value
Pre-test	10.92	3.52	9.68	12.48
Post test	20.6	5.53		

$$t_{(49)} = 2.008, p < 0.05$$

Data in table 8 shows that the mean post-test knowledge score (20.6) was higher than the mean pre-test knowledge score (10.92). The calculated 't' value 12.48 was greater than the table value (2.008) at 0.05 level of significance. Hence the null hypothesis (H_0) was rejected and research hypothesis was accepted.

IV. Association between pre-test knowledge score and selected demographic variables

This section deals with findings of the selected demographic variables like age, sex, source of knowledge, previous knowledge of nursing students.

4. Chi-square test showing the association between pre-test knowledge score and selected demographic variables

n = 50

Demographic variable	Pre-test knowledge score		df	χ^2	Inference
	≤ median	>median			
Age (in years)					
18-20	2	0	2	.269	NS
21-23	23	19			
>24	3	3			
Sex					
Male	7	7	1	0.125	NS
Female	21	15			
Previous knowledge					
Yes	22	13	1	2.23	NS
No	6	9			
Source of knowledge					
Mass Media	6	0	3	8.89	S
Health personnel	3	0			
Clinical experience	13	22			
In service education	6	0			

$$\chi^2 = 3.84, df=1; \chi^2 = 5.99, df=2; \chi^2 = 8.89, df=3$$

$P < 0.05$

NS- Non Significant S- Significant

Data presented in the table 4 shows that there was significant association between source of previous knowledge and knowledge score and there was no significant association between the pre-test knowledge score and demographic

variable such as age, sex, previous knowledge of students. In case of age, sex and previous knowledge of students the calculated χ^2 value was less than the table value at 0.05 level of significance. So the null hypothesis H_{01} accepted for these variables and in case of last one variable the χ^2 was greater than the table value at 0.05 level of significance. So the research hypothesis H_2 was accepted for this variable.

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